WHAT IS CLAIMED IS:

1. A fusion carrier protein for expressing a target peptide, said fusion carrier protein being derived from *Staphylococcus nuclease*, or a mutant thereof, and consisting of between 80 and 120 amino acid in length.

2. A fusion carrier protein having an amino acid sequence as set forth in Formula I:

$$T_1\text{-}A_1\text{-}X_1\text{-}A_2\text{-}X_2\text{-}A_3\text{-}X_3\text{-}A_4\text{-}X_4\text{-}A_5\text{-}A_6\text{-}A_7\text{-}X_5\text{-}A_8\text{-}A_9\text{-}T_2 \quad (I)$$

Wherein

T_1 is absent, a His-tag or at least one peptidic cleavage site,

A_1 is Ala-Thr-Ser-Thr-Lys-Lys-Leu-His-Lys-Glu-Pro-Ala-Thr-Leu-Ile-Lys-Ala-Ile-Asp-Gly-Asp-Thr-Val-Lys-Leu (SEQ ID NO:1),

X_1, X_2, X_3, X_4, and X_5, each independently is any one amino acid or a His-tag,

A_2 is Tyr-Lys-Gly-Gln-Pro (SEQ ID NO:2),

A_3 is Leu-Leu-Leu-Val-Asp-Thr-Pro-Glu-Thr-Lys-His-Pro-Lys-Lys-Gly-Val-Glu-Lys-Tyr-Gly-Pro-Glu-Ala-Ser-Ala-Phe-Thr-Lys-Lys (SEQ ID NO:3),

A_4 is Val-Glu-Asn-Ala-Lys-Lys-Ile-Glu-Val-Glu-Phe-Asp-Lys-Gly-Gln-Arg-Thr-Asp-Lys-Tyr-Gly-Arg-Gly-Leu-Ala-Tyr-Ile-Tyr-Ala-Asp-Gly-Lys (SEQ ID NO:4),

A_5 is Val-Asn-Glu-Ala-Leu (SEQ ID NO:5),

A_6 is absent or at lest one of Asp-Pro, Phe-Asn-Pro-Arg-Gly-Ser (SEQ ID NO:6) and His-tag,

A_7 is absent or Val-Arg-Gln-Gly-Leu-Ala-Lys-Val-Ala-Tyr-Val-Tyr-Lys-Pro (SEQ ID NO:7),

A_8 is absent or at least one of Asp-Pro and Phe-Asn-Pro-Arg-Gly-Ser (SEQ ID NO:6),

A_9 is absent or Asn-Asn-Thr-His-Glu-Gln-Leu-Leu-Arg-Lys-Ser-Glu-Ala-Gln-Ala-Lys-Lys-Glu-Lys-Leu-Asn-Ile-Trp-Ser-Glu-Asp-Asn-Ala-Asp-Ser-Gly-Gln (SEQ ID NO:8), and

T_2 is absent, a His-tag or at least one peptidic cleavage site.

3. The fusion carrier protein of claim 1, wherein the peptidic cleavage site is selected from the group consisting of Met, Asp-Pro, Gly-Pro, Asp-Gly, Phe-Asn-Pro-Arg (SEQ ID NO:9), Leu-Val-Pro-Arg (SEQ ID NO:10), Phe-Asn-Pro-Arg-Gly-Ser (SEQ ID NO:6), and Asp-Asp-Asp-Asp-Lys (SEQ ID NO:12).

4. The fusion carrier protein of claim 1, wherein the His-tag is composed of three to eight histidine residues.

5. A fusion carrier protein comprising a sequence as set forth in SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20 or SEQ ID NO:24.

6. A fusion protein comprising the fusion carrier protein as defined in claim 1, 2, 3, 4 or 5, linked to at least one target peptide.

7. The fusion protein of claim 6, wherein the target peptide is linked to the C-terminus of the fusion carrier protein.

8. The fusion protein of claim 6, wherein the target peptide is linked to the N-terminus of the fusion carrier protein.

9. The fusion protein of claim 6, 7 or 8, wherein the target peptide has a sequence between 2 and 100 amino acids in length.

10. The fusion protein of claim 6, 7, 8 or 9, wherein the target peptide is selected from the group of peptide consisting of eCla4, eSte20, hirudin, mCla4, mSte20, cCla4, cSte20, FpA, FD22, propeptide of human Cathepsin B, PTH and EphrinB, or fragments thereof.

11. The fusion protein of claim 6, 7, 8, 9, 10, further comprising a peptidic cleavage site between the fusion carrier protein and the target peptide.

12. A nucleic acid sequence encoding the fusion protein of claim 6, 7, 8, 9, 10 or 11.

13. An expression vector comprising the nucleic acid sequence of claim 12, operably linked to a promoter for expression of said nucleic acid sequence coding for the fusion protein.

14. The expression vector of claim 13, wherein the promoter is pL promoter, λ promoter, trc promoter or T7 promoter.

15. A host cell transformed with the expression vector of claim 13 or 14.

16. The host cell of claim 15, wherein said host cell is E. coli DH5α, BL21, JM101 or JM105 or NM522 or N99Cl+.

17. The host cell of claim 15, wherein said host cell is from E. coli or B. subtilis.

18. The host cell of claim 15, wherein said host cell is a yeast.

19. A method for producing a fusion protein comprising the step of culturing the host cell as defined in claim 15, 16, 17 or 18 under suitable conditions for expression of the expression vector, thereby producing a fusion protein.

20. The method of claim 19, wherein the suitable conditions comprise an inducer for inducing the host cell to express the espression vector.

21. The method of claim 20, wherein the inducer is IPTG, nalidixic acid or temperature.

22. The method of claim 19, 20 or 21, further comprising a step of purification of the fusion protein produced.

23. The method of claim 22, wherein the step of purification comprises at least one of alcohol precipitation, ion-exchange, and affinity purification using Ni-agarose resin.

24. The method of claim 19, 20, 21, 22, or 23, wherein the fusion protein is further subjected to a proteolytic digestion to release the target peptide from the fusion protein.

25. The method of claim 24, wherein the proteolytic digestion is achieved by CNBr, formic acid or HCl.

26. The method of claim 24, wherein the proteolytic digestion is achieved by thrombin, or a protease.

27. The method of claim 26, wherein the protease is an enterokinase.

28. The method of claim 24, 25, 26 or 27, wherein the target peptide released is further purified by HPLC.

29. Use of a fusion carrier protein as defined in claim 1, 2, 3, 4 or 5 for expressing a target peptide.

30. Use of a nucleic acid sequence as defined in claim 12 for expressing a target peptide.

31. Use of an expression vector as defined in claim 13 or 14 for expressing a target peptide.

32. Use of a host cell as defined in claim 15, 16, 17 or 18 for expressing a target peptide.